Space Weather Forecast

Issued on Monday, 24 October 2022 at 13:24 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of G1/Minor Geomagnetic Storms days 1 and 2 (24th and 25th). Slight chance of R1 Radio blackouts.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity over the past 24 hours has been Low, with several common class flares from AR3130 in the southeast quadrant, and AR3126 in the southwest. Two further regions are weak and are considered to present a negligible risk. No earth directed coronal mass ejections have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind has remained between slightly elevated and elevated levels through the period due to the fast wind of coronal hole 34. Total magnetic field strength was moderate until 24/0100 UTC, after which it became weak. The north-south component followed a similar trend, fluctuating between +10/-8nT but easing with time. Geomagnetic activity was generally Quiet to Unsettled (Kp 2-3) with a spell at Active between 23/1500-2400UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be mainly Low or Very Low, with a slight chance of becoming Moderate with any isolated Moderate class flares.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs have been observed. The high speed stream from coronal hole 34 is expected to continue at around 500-600km/s through 24 October and perhaps 25 October. A decline in speeds is then forecast from later on 25 October through the remainder of the period. Geomagnetic activity is expected to be mainly Unsettled to Active on 24 October, with a chance of G1/Minor Storms. There is further risk of G1/Minor Storms on 25 October, resulting in a rapidly decreasing risk from later on 25 October, with activity becoming mainly Quiet to Unsettled.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is forecast to persist at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	30	10	5	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	20	20	25	25
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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